Installing and Configuring Java on Linux

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INSTALLING AND CONFIGURING JAVA ON LINUX

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Note!

The content of this document is based upon the following Sun web sites:

http://java.sun.com/j2se/1.4.1/install-linux.html#plugin
http://java.sun.com/j2se/1.4.1/manual_install_linux.html
http://java.sun.com/j2se/1.4.1/control_panel_script.html

The procedures have not been tested by an independent laboratory.

USING THIS DOCUMENT

Every page number, table number, and cross reference is an active link. Links enable you to jump from one point to another point in the document.

A link is indicated when the cursor changes to a .

Click on the link to jump to another point in the document.

ORDER OF INSTALLATION

1. Install the Java™ 2 Runtime Environment (JRE), Standard Edition, version 1.4.1. or higher.
2. If necessary, unregister old versions of the Java™ Plug-in.
3. Install the new Java™ Plug-in.
4. Install the Java™ Web Start.

> ***Note!***
>
> *The Java™ 2 Runtime Environment must be installed **before** installation and registration of both the Java™ Plug-in and the Java™ Web Start.*

SYSTEM REQUIREMENTS

Following are the system requirements for this version of the Java™ 2 Runtime Environment (JRE):

Processor	Intel Pentium platforms
Memory	32 MB minimum 48 MB recommended
Operating System	Linux kernel vers. 2.2.12 and glibc vers. 2.1.2-11 or higher *
Hard Disk	75 megabytes of free disk space before attempting to install the Java 2 JRE software
Windows Manager Configuration	16-bit color mode with KDE or the Gnome desktop and in conjunction with displays set to local hosts
Browser	Netscape versions 4.x and higher have been tested.
* To check your version of the glibc, use the command: ls /lib/libc-*	

Most testing of JRE 1.4.1 for Linux in the English-locale has been conducted on Red Hat 7.2, with kernel patch 2.4.9-31. Most testing in non-English locales has been conducted on Red Hat 7.1. However, JRE 1.4.1 has undergone limited testing on these other Linux operating systems:

- Caldera Open Linux 3.1 (kernel 2.4.2, glibc 2.2.1)
- Turbo Linux 7.0 (kernel 2.2.18, glivc 2.1.x)
- SuSE Linux 7.1 (kernel 2.4, glibc 2.2.14)
- Turbo Linux for Simplified Chinese locale

INSTALLING THE JAVA™ 2 RUNTIME ENVIRONMENT

> ***Note!***
>
> *The notation <version number> indicates that you must substitute the appropriate JRE update version number for the notation. For example, if you are downloading update 1.4.1_01, the command:* ./j2re-1_4_1_<version number>-linux-i586.bin *would become:* ./j2re-1_4_1_01-linux-i586.bin

The Java™ 2 Runtime Environment (JRE), Standard Edition, version 1.4.1 is available in two installation formats.

- A self-extracting binary file, j2re-1_4_1_<version number>-linux-i586.bin which can be used to install the Java 2 Runtime Environment in a location chosen by the user. If you are using this file, see *Installation via the Self-extrating Binary File*, on p. 4.
- The file j2re-1_4_1_<version number>-linux-i586-rpm.bin that contains RPM packages comprising the Java 2 Runtime Environment. If you are using this bundle, see *Installation via RPM Packages*, on p. 6.

The bundles for both installation formats are packaged in a .bin shell script. The product license agreement is displayed before installation.

Installation via the Self-extrating Binary File

1. Download the file.

   Before you download a file, notice that its byte size is provided on the download page. Once the download is complete, check that you have downloaded the full, uncorrupted software file.

2. Browse to the directory into which the JRE is to be installed.

   For example, if you want to install the software in the /usr/java/ directory, then execute: cd/usr/java

3. Launch the installation scripts by using the following commands from the directory in which the file is located:

   a. Type
   `chmod a+x j2re-1_4_1_<version number>-linux-i586.bin`
   and press Enter

   b. Type
   `./j2re-1_4_1_<version number>-linux-i586.bin`
   and press Enter

4. Agree to the binary license agreement. The install script installs JRE in a directory called j2re1.4.1_<version number> in the current directory.

Regarding System Preferences

By default, the installation script configures the system such that the backing store for system preferences is created inside the Java 2 JRE's installation directory. If the JRE is installed on a network-mounted drive, it and the system preferences can be exported for sharing with Java runtime environments on other machines. Alternately, root users can use the -localinstall option when running the installation script, as in this example:

j2re-1_4_1_<version number>-linux-i586.bin -localinstall

This option causes the system preferences to be stored in the /etc directory from where they can be shared only by VMs running on the local machine. You must be defined as a "root user" for the -localinstall option to work.

See the Preferences API documentation for more information about preferences in the Java platform.

Regarding Root Access

If you choose to install the Java 2 Runtime Environment into system-wide location such as /usr/local, you must first login as "root" to gain the necessary permissions. If you do not have root access, simply install the Java 2 Runtime Environment into your home directory, or a subdirectory that you have permission to write to.

Installation via RPM Packages

To install Java 2 Runtime Environement in the form of RPM packages:

1. Download the file.

   Before you download a file, notice that its byte size is provided on the download page. Once the download has completed, check that you have downloaded the full, uncorrupted software file.

2. Launch the installation script by using the following commands from the directory in which it is located:

   a. Type
   chmod a+x j2re-1_4_1_<version number>-linux-i586-rpm.bin
   and press Enter

   b. Type
   ./j2re-1_4_1_<version number>-linux-i586-rpm.bin
   and press Enter

3. Agree to the binary license agreement. The install script creates the file j2re-1_4_1_<version number>-linux-i586.rpm in the current directory.

4. Login as "root" by running the **su** command and entering the super-user password.

5. Run the following command to install the packages comprising the Java 2 Runtime Environment.

   rpm -iv j2re-1_4_1_<version number>-linux-i586.rpm

6. Exit the root shell.

REGISTRATION OF THE JAVA™ PLUG-IN

Following installation of the Java™ 2 Runtime Environment (JRE), the Linux based browser must be configured to locate the Java™ Plug-in. This process is called either "registration" or "installation."

Registration can be accomplished either manually or automatically (via the ControlPanel). Both procedures are detailed below.

For documentation regarding the Java™ Plug-in product, see http://java.sun.com/j2se/1.4/docs/guide/plugin/index.html

Manual Installation/Registration of Java Plug-in—Linux

> ***Note!***
>
> *Only one Java Plug-in can be registered at a time. When you want to use a different version, unregister any other version before registering the new one. For instructions on unregistering a Java Plug-in, see Unregistering a Java Plug-in, p. 13.*

To install the Java™ Plug-in follow these steps.

1. If applicable, unregister the previous installation of the Java Plug-in. For instructions, see *Unregistering a Java Plug-in, p. 13*.
2. Follow the instructions below for either Netscape 4.x or Netscape 6.

Netscape 4.x

a. Set the NPX_PLUGIN_PATH environment variable to the directory containing the javaplugin.so file. This file is located inside the Java 2 JRE in the jre/plugin/i386/ns4/ directory.

> ***Note!***
>
> *1. The location of the Plug-in (javaplugin.so) should be given with an absolute path—not relative to the installation location of the JRE.*
>
> *2. Setting NPX_PLUGIN_PATH will override the default search path used by the browser. Therefore any plugin directories that the browser currently searches for plugins should also be added to the path.*

The next command needs to be typed.

b. Set the environment variable NPX_PLUGIN_PATH to the directory containing the javaplugin.so file. For example,

   export NPX_PLUGIN_PATH=”/usr/java/j2re1.4.1_02/plugin/i386/ns4 : /usr/lib/netscape/plugins” (bourne/bash shell).

c. Start your Netscape browser (from the terminal where you set NPX_PLUGIN_PATH), or restart if it is already running.

d. Restart your browser a second time (this is a Netscape bug workaround).

e. Create a symbolic link to the Java Plug-in libjavaplugin.so file in the Netscape 4 plugins directory.

   i. cd <Netscape 4>/plugins

   ii. ln -s <jre>/plugin/i386/ns4/libjavaplugin.so <netscape>/plugins/. (<jre> is the path to your Java Runtime Environment (JRE) installation. <netscape> is the directory housing Netscape 4.)

Netscape 6

a. Create a symbolic link to the Java Plug-in libjavaplugin.so file in the Netscape 6 plugins directory.

   i. cd <Netscape 6>/plugins

   ii. ln -s <jre>/plugin/i386/ns610/libjavaplugin_oji.so <netscape>/plugins/. (<jre> is the path to your Java Runtime Environment (JRE) installation. <netscape> is the directory housing Netscape 6.)

   Be sure to include the period at the end.

For all Netscape browsers

3. Start your Netscape browser, or restart it if it is already up.

4. In Netscape, click **Help > About Plug-ins** to confirm that the Java Plug-in is loaded.

Control Panel Script Options for Plug-in Registration

The Control Panel script (ControlPanel) can be used with various options for registering/unregistering the Java Plug-in with the server. The purpose of these new options is to make registering/unregistering of the Plug-in with the browser easier and more reliable.

ControlPanel is located at: **<java_installation>/bin/ControlPanel**

> ***Note!***
>
> *Only one Java Plug-in can be registered at a time. When you want to use a different version, unregister any other version before registering the new one. For instructions on unregistering a Java Plug-in, see Unregistering a Java Plug-in, p. 13.*

Command Form

The general form of the command is as follows:

```
ControlPanel [ ( -r scheme | -u scheme ) -c path -j path ]
```

-r scheme | -u scheme
Registers or unregisters the plugin, respectively, using the supplied scheme. Only one switch should be specified; and, if more that one is, only the last one specified will be honored. Registration schemes are described below.

-c path
As indicated by path, specifies where ControlPanel script can find the installation location of the browser.

-j path
As indicated by path, specifies where ControlPanel script can find the installation location of Java (Java Runtime Environment or JRE).

If no options are specified, the script will launch the Control Panel GUI.

Registration Schemes

WARNING!

Use only the recommended schemes for this release (highlighted in the table) or results may not be predictable. Do not use any of the schemes for registering or unregistering older versions of Plug-in; these schemes are intended for this release only..

Scheme Name	Scheme Description
ns4	**Recommended Scheme for Netscape 4.x Browsers** This is the recommended scheme for registering this release of Java Plugin with a Netscape 4.x browser. For this release, using this scheme is equivalent to using ns4E. In future releases, however, this scheme may equate to a another.
ns4E	The browser uses the Netscape 4.x method of setting the NPX_PLUGIN_PATH environment variable. The script returns the value that the variable should be set to.
ns4L	The browser uses the Netscape 4.x method that assumes a Netscape Plugins directory. A symbolic link is made from that directory to the Java Plug-in.
ns610	**Recommended Scheme for Netscape 6.2.x Browsers** This is the recommeded scheme for registering this release of Java Plugin with a Netscape 6.2.x browser. For this release, using this scheme is equivalent to using ns610L. In future releases, however, this scheme may equate to a another.
ns610L	The browser uses the Netscape 6.x method that assumes a Netscape Plugins directory. A symbolic link is made from the directory to the Java Plug-in.
ns610R	The browser uses the Netscape 6.x method that assumes the existence of regxpcom, which is executed on the Java Plug-in.

Notes regarding the schemes:

ns4E, ns4 and NPX_PLUGIN_PATH

- Schemes ns4E and ns4, used with Netscape 4.x browsers and utilizing the environment variable NPX_PLUGIN_PATH, do not register the Plug-in with the browser. Running the script with these schemes simply tells you what you need to set NPX_PLUGIN_PATH to. Therefore, you need to manually set this environment variable yourself.
- Since in this release both ns4E and ns4 use NPX_PLUGIN_PATH, you need to set this variable manually for either scheme that you use.
- Setting NPX_PLUGIN_PATH will override the default search path used by the browser. Therefore, any plugin directories that the browser currently searches for plugins, or should search, should also be added to the path.

Use of ns610R

- The ns610R scheme is not a recommended scheme for registering (-r) or unregistering (-u) the Java Plug-in in the 1.4.1 release. **`regxpcom`** may not register/unregister the Java Plug-in properly, causing the Plug-in not to work.
- If you plan to run the script with the ns610R option, which uses **`regxpcom`**, do the following before you run it:
  a. shut down the the browser
  b. setenv LD_LIBRARY_PATH <Netscape 6>:$LD_LIBRARY_PATH
- If you do not add Netscape to your LD_LIBRARY_PATH as described above for the ns610R options, you are likely to get an error when you run the script. The message will say that “Open failed: No such file or directory.”

Final Steps

As a final step after running the script—and, for schemes ns4E and ns4, setting the NPX_PLUGIN_PATH environment variable—do the following:

- For Netscape 4.x browsers, restart the browser twice.
- For Netscape 6.x browsers, restart it once.

Examples

Registering (recommended method for Netscape 4.x)

Suppose your home directory is /home/jones and you have installed Netscape 4.79 at:

/home/jones/netscape479

and you have installed the J2SE 1.4.1 SDK at: **/home/jones/j2sdk1.4.1**

To register Java Plug-in with the browser using ns4 method (recommended for this release for Netscape 4.x browsers), you would type the following at the command line of a terminal window:

```
/home/jones/j2sdk1.4.1/bin/ControlPanel -r ns4 -c /home/
jones/netscape479 -j /home/jones/j2sdk1.4.1/jre
```

For this release, since ns4 is the same as ns4E, be sure to set the NPX_PLUGIN_PATH environment variable. (See above note about ns4E, ns4 and NPX_PLUGIN_PATH.)

Registering (recommended method for Netscape 6.2.x)

Suppose your home directory is /home/jones and you have installed Netscape 6.2 at:

/home/jones/Netscape6

and you have installed the J2SE 1.4.1 SDK at: **/home/jones/j2sdk1.4.1**

To register Java Plug-in with the browser using the ns610 method (recommended for this release for Netscape 6.2.x browsers) you would type the following at the command line of a terminal window:

```
/home/jones/j2sdk1.4.1/bin/ControlPanel -r ns610 -c /home/
jones/Netscape6 -j /home/jones/j2sdk1.4.1/jre
```

Unregistering

Suppose that have registered Java Plug-in with Netscape 6.2 and:

- your home director is /home/smith
- Netscape 6.2 is installed at /home/smith/Netscape6
- you have installed the Java Runtime (JRE) at /home/smith/j2re1.4.1
- you have registered the Plug-in with the Netscape browser using the ns610 method (recommended for this release for Netscape 6.2.x browsers)

To unregister the Plug-in with the browser, you would type the following at the command line of a terminal window:

```
/home/smith/j2re1.4.1/bin/ControlPanel -u ns610 -c /home/
smith/Netscape6 -j /home/smith/j2re1.4.1
```

UNREGISTERING A JAVA PLUG-IN

If applicable, uninstall the previous installation of the Java Plug-in. Depending upon the version, one or more of these files must be deleted.

- rm -fr $HOME/.netscape/java
- rm $HOME/.netscape/plugins/javaplugin.so
- rm $HOME/.netscape/plugins/libjavaplugin.so

Before either manual or automatic registration of the new Java Plug-in, you must unregister other versions of installed Java Plug-ins. If you need to unregister an earlier version of the Plug-in, you must do so manually.

- If you used regxpcom to register a Java 1.4.0 Plug-in, use the following command:

  regxpcom -u <absolute path to Java Plug-in libjavaplugin_oji140.so file>

  For example: **regxpcom -u ${JRE}/plugin/i386/ns600/ libjavaplugin_oji140.so**

- If you registered a Java 1.4.0 Plug-in with a symbolic link, remove the link from the Netscape Plug-ins directory.

  For example, suppose for JRE 1.4.0 you created a symbolic link in the Netscape 6 plugins directory. In Linux, this would appear as follows:

  ~/j2sdk1.4.0/jre/plugin/i386/ns600/libjavaplugin_oji.so

  Change directory (cd) to the Netscape 6 Plug-ins directory and remove the following link: **rm libjavaplugin_oji140.so**

  Also check that there are no links in the Netscape components directory.

- If you need to unregister a 1.4.1 Plug-in registered with one of the recommended schemes, do so as follows:
  - If the Plug-in was registered using the ns4 method, remove the environment variable NPX_PLUGIN_PATH that you set.
  - If the Plug-in was registered using the ns610 method, you can use the -u option with the script.

When you are done, check that all Plug-ins have been unregistered.

INSTALLING THE JAVA™ WEB START

The Java™ 2 Runtime Environment (JRE), Standard Edition, version 1.4.1 includes the Java Web Start product. Inside the JRE's top-level directory you will find a ZIP file named "javaws-1_2_0_<version number>-linux-i586-i.zip." The <version number> notation refers to the current Java Web Start version number.

1. Move this file to a location where you want to install the Java Web Start product (preferably outside the JRE installation).
2. Unzip the file. One of the files extracted is **`install.sh`**.
3. Run **`install.sh`**. This installs the Java WebStart product.

Warning!

The Java plug-in will not work if it is moved from the Java directory (e.g. into /usr/lib/opera/plugins), since it will then not be able to find the rest of the Java files.

OPERA FOR LINUX - PLUG-INS: INSTALLATION

Java 2 Runtime Environment with Java Plug-in 1.3.1

1. Download the plug-in. There are two packages, the rpm is the easiest to install.
2. Installation: (If you run into problems, please consult Sun's documentation)
   a. RedHat RPM shell script installation:
      i. Start a shell, find the downloaded file and exctract by: chmod a+x j2re-1_3_1-linux-i386-rpm.bin; ./j2re-1_3_1-linux-i386-rpm.bin
      ii. Install the package by: su -c "rpm -Uvh jre-1.3.1.i386.rpm"
   b. GNUZIP Tar shell script installation:
      i. Start a shell and login as “root” or any user with sufficient access, example: su
      ii. Make a proper installation directory, example: mkdir -p /usr/java
      iii. Find the downloaded file and move or copy it to the installation directory: mv j2re-1_3_1-linux-i386.bin /usr/java
      iv. Go to the installation directory: cd /usr/java
      v. Make the file executeable and execute it: chmod a+x j2re-1_3_1-linux-i386.bin; ./j2re-1_3_1-linux-i386.bin
3. Make sure Opera finds the plug-in by adding /usr/java/jre1.3.1/plugin/i386/ns4 to OPERA_PLUGIN_PATH
4. Make sure Mime-Type's are correctly associated to Show with plug-in under Preferences/Applications/Plug-ins
5. If the installation was succesful you'll see a "Locate a Java User Group Near You" ticker to the bottom left at http://www.java.sun.com/.

KNOWN PROBLEMS

The following are known problems on the non-supported platforms.

- Behavior in conformance with the API specification is not guaranteed while running as superuser on any version of Linux whose kernel was compiled with the **`CONFIG_IP_TRANSPARENT_PROXY`** option. The default kernel shipped with the Red Hat 6.2 distribution is compiled with this option. To avoid incompatibilities associated with this problem, either do not use the Java platform while superuser or else upgrade to a Linux operating system whose kernel was not compiled with the **`CONFIG_IP_TRANSPARENT_PROXY`** option. Red Hat 7.1 and later versions ship with the version 2.4 kernel which does not have this problem.
- When **`System.exit(int)`** is invoked on Red Hat 7.0, the program never exits with a non-zero value. This problem is apparently due to a bug in the **`exit`** function in **`libc.so`** library. To avoid this problem, use Red Hat 6.2 or Red Hat 7.1 rather than 7.0.
- If you use Red Hat Linux 7 Server, you must manually install **`compat-libstdc++-6.21-2.9.0.0.i386.rpm`** to prevent "error while loading shared libraries" when using the Java HotSpot VMs. This file is located in the **`/RedHat/RPMS`** directory on the Red Hat Linux 7 CD-ROM. You may also obtain a copy of this file from **`http://rpmfind.net`**. To install the file, use this command:
  rpm --install compat-libstdc++-6.21-2.9.0.0.i386.rpm

  It is not necessary to manually install compat-libstdc++-6.21-2.9.0.0.i386.rpm if you are using Red Hat Linux 7 Workstation.
- Some early versions of Caldera OpenLinux use version 2.1.2-3 of glibc. Because that version is not greater than or equal to 2.1.2-11, the Java 2 JRE's rpm installer fails during its dependency check. We recommend that you obtain an updated version of the glibc library available from Caldera at the following locations:
  ftp.caldera.com:/pub/updates/eDesktop/2.4/current/RPMS
  or
  ftp.caldera.com:/pub/updates/eServer/2.3/current/RPMS
- An apparent bug in glibc 2.2-7 causes invalid hostnames of the form a.b.c.d.e to be resolved as a valid address (a.b.c.d or a.b.c.e). This bug means that platforms that use glibc 2.2-7 methods, such as **`java.net.InetAddresss.getByName(String host)`**, do not always throw an **`UnknownHostException`**, as they should, when the hostname is invalid.

See also the Linux Notes section of the Release Notes.